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ABSTRACT

This report outlines the rationale by which behavioral objectives for Intermediate Science Curriculum Study (ISCS) materials have been generated and their subsequent use in developing the ISCS student self-assessment system. The ISCS project is designed to develop, test, and disseminate a system of individualized science instruction for grades seven through nine. Students progress at different rates and through different instructional pathways, depending upon their interests, abilities, and previous experience. The materials are designed to accomplish this in ordinary science classrooms with teachers of limited special training. The self-assessment system is composed of sets of questions for each chapter of the basic core text. Responses to questionnaires administered to students and teachers were highly favorable toward the ISCS materials. (Author/RS)

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THE ISCS SELF-ASSESSMENT SYSTEM / TEACHER AND STUDENT REACTION TO IT

TECHNICAL REPORT 3

SE 011 268

TECHNICAL REPORT III
THE ISCS SELF-ASSESSMENT SYSTEM
TEACHER AND STUDENT REACTION TO IT

PREPARED BY
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May, 1971

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INTERMEDIATE SCIENCE CURRICULUM STUDY
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FORWARD

The intent of the ISCS Technical Report Series is to communicate with colleagues and other individuals who are actively interested in research and development activities associated with curriculum materials. The rationale for the Technical Report Series is three-fold: first, to report in a concise, descriptive, and explanatory nature the advances made in the technology of curriculum development; second, to give quick distribution to pilot studies that have potential for further research and subsequent reporting; and third, to circulate pre-publication copies of implementation studies that will after proper technical review ultimately be found in professional journals.

This report outlines the rationale by which behavioral objectives for ISCS materials have been generated and the subsequent use made of them in developing the ISCS student self-assessment system. The reaction of students and teachers to ISCS self-evaluation is the primary subject of this report.

Ernest Burkman, Director

May, 1971

Intermediate Science Curriculum Study

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Without the cooperation of both teachers and students in completing and returning questionnaires, this report would not be possible. Much of the clerical work and all of the preparation of data for computer processing was done by Charlene Ripley. The report was edited by James A. Hathway assisted by Lois S. Wilson.

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GENERAL BACKGROUND

The Intermediate Science Curriculum Study (ISCS) is a large-scale instructional research project developed and housed at Florida State University and supported by a contract with the United States Office of Education and grants from the National Science Foundation. The Project is designed to develop, test, and disseminate a system of individualized science instruction for grades seven through nine.

The Project is organized on a develop, field-test, revise design. Draft materials are produced at Florida State University by on-campus and invited off-campus personnel and tested on a large national sample of junior high school students. During the 1970-71 academic year, approximately 194,000 students in 48 states used the ISCS materials. In addition, a small number of students from the Florida State University demonstration school has taken a computer-assisted instruction version of the materials. To date, more than 400 scientists, teachers, and education specialists have cooperated in the development process.

A unique feature of the ISCS materials is that the students using them progress at different rates and through different instructional pathways, depending upon their interests, abilities, and previous experience. The materials are designed so that this can be accomplished in ordinary science classrooms by teachers with limited special training.

The package of instructional materials for each grade level consists of printed materials, especially designed laboratory apparatus, a student self-evaluation system based upon behavioral objectives established for the instructional materials, teacher orientation materials, and standardized tests. The Silver Burdett Corporation, assisted by the Educational Division of Damon Engineering, has distribution of the experimental ISCS materials and is aided in the marketing of the commercial version of them.

The Project has generated world-wide interest and its Newsletter, published twice yearly, now goes to more than 12,000 people in 42 countries. ISCS materials are now in use in Australia and in the American dependent schools in Germany and Japan. Experimental testing of the materials is underway in Manila, and a joint Florida State University-Philippines effort is currently producing a special Philippines version of the program. In addition, Project personnel have visited India and several South American countries for preliminary discussions related to possible use of the materials in these areas.

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RATIONALE FOR ISCS OBJECTIVES

The Intermediate Science Curriculum Study has employed what might be termed a semi-systems approach in designing instructional materials. Although the outcomes toward which the ISCS effort has been directed are similar to those of groups who embrace a systems approach to instructional design, the ISCS methods for reaching such goals have been somewhat different. Systems oriented instructional designers attempt to build an instructional package that is comprised of rather specific instructional objectives--a package containing instructional materials designed to accomplish the stated objectives and evaluation materials with which to determine when the objectives have been met.

When the systems approach is applied in a conventional way, the first step in the developmental process is to specify objectives. Only after the desired instructional objectives have been stated in highly specific terms are the instructional materials developed. Normally, the evaluative materials are the last portion of the system to be developed. Early in the history of ISCS, however, those who conceived the general plan determined that a conventional systems approach would not yield the desired results. Instead, ISCS chose to begin with the development of the instructional materials and subsequently to use those materials as the basis for determining the specific objectives for the program and the evaluative materials with which to measure the student's progress.

The decision to develop instructional materials prior to stating objectives stemmed largely from experiences gained during an informal

writing conference held during the summer of 1964 at The Florida State University. During this conference a group of writers set out to produce materials that were not to be qualitatively different from the ones that today comprise the ISCS package. But the writers had difficulty in getting under way initially because of problems encountered in their attempts to prestate objectives.

The negative reaction to prestating instructional objectives, experienced by the writers at the 1964 conference, has turned out to be not an isolated incident. As a general rule, people who are knowledgeable with respect to science tend to object on two grounds to being required to prestate specific objectives. First, they often feel that it is impossible really to know in advance what they seek to accomplish with a good set of science instructional materials, and even if it were possible to make such a prediction, much of what good science instruction is aimed at accomplishing cannot be stated in very specific terms. Second, science content specialists feel that prestating specific instructional objectives tends to be unduly constraining to a curriculum materials developer and, therefore, reduces his perspective.

It was apparent to those who planned the ISCS effort that there was validity in the objections that content specialists made to the systems approach. Perhaps more important, they felt that content specialists were an absolutely essential part of the development team, and it was clear that recruiting individuals with this kind of capability and getting them to work productively would be extremely difficult if the group tried to apply a conventional systems model to designing the ISCS materials.

With these considerations in mind, the production of instructional materials was set as the first task to be accomplished, and the statement of objectives was postponed for a time. Although there are certain disadvantages to this approach, using it was critical in maintaining a reasonable production schedule. ISCS strongly urges that other groups initiating curriculum development efforts consider doing the same.

Beginning in the winter of 1967, ISCS staff members began to analyze very carefully the draft materials for Level I (seventh grade) and to put into formal performance statements the objectives they inferred that the writers had intuitively included. This process was simplified because the writers had been asked to intersperse at frequent intervals within the student text questions that would presumably help the student to ascertain whether or not he had understood what was intended. These questions proved to be an invaluable help to those who were given the task of formalizing the objectives that had been intuitive up to that point, and in a surprisingly short time chapter-by-chapter sets of formal objectives were committed to paper.

In retrospect, the ISCS staff feels that the approach to writing behavioral objectives described above is an extremely effective one. By having the content specialist, so necessary to the curriculum development effort, concentrate upon developing materials, the ISCS group has avoided the kind of "wheel spinning" reported by others attempting to verify objectives as their first step and encountered by ISCS during its 1964 preliminary writing conference. This approach to establishing objectives may very well be more efficient than the conventional systems approach. Almost certainly content specialists who are given free rein to develop instructional materials intuitively

build into those materials objectives that would likely be overlooked initially. Furthermore, by leaving the actual formalization of objectives to people with training in this area, rather than asking content specialists to do it, the quality of the statements are likely to be superior. When the ISCS program is complete, the Project will have produced a complete set of objectives, materials directed toward those objectives, and evaluative instruments with which to measure when the objectives have been attained. The ISCS staff doubts whether this could have been accomplished if the Project had chosen to use a straightforward systems approach. And if the job could have been done, producing a good set of objectives together with the related student materials and evaluative instruments would have undoubtedly taken longer.

THE ISCS SELF-ASSESSMENT SYSTEM

The student self-assessment system was developed as a by-product of the formalization of the detailed behavioral objectives for each chapter of the instructional material. This formal development of performance objectives together with items by which the objectives could be measured occurred concurrent with the second revision of instructional materials at each grade level. The motivation for the self-assessment system grew out of teacher and student feedback which indicated a real need for individual assessment of progress and out of a need for detailed feedback of individual student performance during the field trial. Items were selected from the pool of performance objectives to provide direct feedback to the student and ISCS on important terminal behaviors expected at the end of each chapter.

Overall, the ISCS self-assessment system can be characterized as cognitive. These cognitive items were designed so as to permit the student to respond to most questions in writing. The items frequently required answers in a free-response format. In the few cases in which a teacher observer was required during the actual time the performances were being carried out, provisions were made to list the teacher's comments about the student's performance in the student's written record. This reporting format permitted ISCS to collect response booklets in order to obtain detailed information for formative evaluation. The data obtained in this manner proved to be the most helpful formative element ISCS got directly from the student in the field.

The value of the self-assessment data lay in its specificity to the stated objectives of the program. The free-response format had the advantage of indicating not only the extent to which a student did or did not exhibit the desired behaviors but also frequently a pattern in the students' errors.

This rich source of formative information is, however, expensive in terms of the manhours required for scoring and processing. In the light of the magnitude of the analysis task, ISCS limited its sample to approximately five hundred students from each grade level and monitored student progress throughout all chapters of the second revision of the instructional material (the third field trial). This provided a pool of approximately one thousand key items of specific behavioral information for each student. The analysis of this data provided the revision teams with a valuable basis for assessing the level of the materials, the need for new remedial excursions, and, of course, the extent of revisions needed for any particular sequence. And all of this came in time for the preparation of the first commercial edition of the instructional material.

STUDENT AND TEACHER REACTION

The ISCS self-assessment system was designed mainly to aid students in assessing their own progress as they proceeded through the ISCS instructional sequence. As described earlier, the system is composed of sets of questions for each chapter of the basic core text. The questions are based on selected behavioral objectives derived from the ISCS instructional materials. Presently, there are sets of questions for all three levels of ISCS.

It is the intent of the self-assessment system that each student, upon completion of a chapter, answer the set of questions for that chapter. Then he checks his responses using the answer key provided. Because the set of questions is intended for student use, the teachers are requested not to use it for grading purposes. In fact, in the preface of the Self-Evaluation, the students are told that the questions are intended for their own use and not for determining their grade in the course.

Self-assessment was used for the first time with the ISCS materials during the 1968-69 field trial. At that time the system was available only for Level I (grade seven). During this initial use, ISCS sought the answers to two questions: "How is the self-evaluation actually being used by students and teachers?" and "What were the reactions of students and teachers to the system?" In order to obtain answers to these questions, questionnaires were prepared for both teachers and students. Each questionnaire tried to get the teacher's and student's reactions to the system and also some idea of how the system was being utilized in the field.

Twenty-five of the fifty-six seventh-grade tryout teachers for 1968-69 were selected at random and asked to complete one of the self-assessment system questionnaires. Ten of the one hundred and sixty-eight classrooms of seventh-grade students were also randomly selected as the source for student opinions of the self-assessment system. The results of these questionnaires are shown beginning on page 10.

A second survey concerning the self-assessment system was made during the 1969-70 academic year. At that time self-evaluation items were also available for Level II (grade 8). The purpose of the second survey was to find out if there was long-range consistency in student and teacher opinion of the self-assessment system and also if there were any significant differences between how the self-evaluation system was used in dependent (ISCS supported) and independent (non-ISCS supported) centers.

During the 1969-70 academic year, only Level II and Level III (grade nine) courses were supported by ISCS since the official field trial of the Level I materials was completed in 1968-69.

In order to sample the opinions of students and teachers in dependent centers for the second survey, twenty-five of the forty-two supported eighth-grade teachers were selected at random to complete the questionnaires. Ten of the one hundred and sixty-two supported classrooms of eighth-grade students were also selected at random to obtain student opinions.

To sample opinions of students and teachers in independent centers, eight sets of teacher and student questionnaires were sent to each of five independent centers. A set consisted of eight teacher questionnaires and five classroom sets of student questionnaires. The center leaders were requested to distribute the questionnaires randomly to the teachers in their respective centers. The results of the survey for 1969-70 are shown beginning on page 14.

1968-69 SURVEY OF THE SELF-ASSESSMENT SYSTEM

Summary of Teachers' Opinions

1968-69

Total Number of Dependent Level I Teachers Sampled: 25

Total Number of Dependent Level I Teachers Responding: 22

Question: 1. Do you think the Self-Evaluation booklets are worthwhile?

Response: Twenty-two teachers answered "yes." There were no unfavorable responses to this question. The tenor of the explanations was based on the value of the booklets as a review and as a means of self-check for students.

Question: 2. Do the students use the self-evaluation questions without your prodding them to do so?

Response: Seventeen teachers answered "yes," three answered "no," and two answered "sometimes." From the responses to this question, it appears that some students need prodding to use the booklets. However, most remarks indicated that this is an initial reaction to tests in general and that once the students realize they are not being graded on the questions and that their purpose is to help them, no prodding is necessary.

Question: 3. What do you think are the main advantages, if any, of the Self-Evaluation booklets?

Response: Twenty-one teachers responded that the main advantage is as a review and summary of the chapters. One teacher responded that the questions were of value only to the better students.

Question: 4. What do you think are the main disadvantages, if any, of the Self-Evaluation booklets?

Response: Seventeen teachers responded that there were no disadvantages. Four teachers said the teacher observations of tasks were too time-consuming. Three teachers said some of the questions were too difficult or were poorly stated. One teacher requested more answer books. (Some teachers gave more than one response.)

Question: 5. Explain briefly how you use the Self-Evaluation booklets in your classroom.

Response: The majority of teachers appear to follow a similar plan. After a student finishes a chapter, he answers the questions in the booklet and checks his answers himself. Five teachers said they discuss incorrect responses with students.

Question: 6. What percentage of your students consistently use the self-evaluation questions?

Response: One teacher responded 25%, two teachers 50%, seven teachers 75%, and twelve teachers said 100%.

Summary of Students' Opinions

1968-69

Total Number of Dependent Level I Classrooms Sampled: 10

Total Number of Dependent Level I Classrooms Responding: 7

Total Number of Dependent Level I Students Represented: 250

Question: 1. I use the self-evaluation questions

80% after every chapter I finish.

20% after some chapters.

_____ never.

Question: 2. I use the self-evaluation questions because

48% they help me find out what I don't know.

40% my teacher requires me to use them.

12% I like to use them.

Question: 3. When I find I have a wrong answer, I

a. talk to my teacher 12% always, 62% sometimes, 26% never.

b. review the materials in the book 20% always, 68% sometimes, 12% never.

c. talk to a classmate 31% always, 48% sometimes, 21% never.

Question: 4. I think that the self-evaluation questions are

12% too hard most of the time.

6% too easy most of the time.

82% about right in difficulty most of the time.

Iggy wants to know what you think about the self-evaluation questions.

Write your opinions here:

This was an open-ended question. Approximately 200 students wrote some kind of statement. The responses were categorized into four groups: favorable (comments which were entirely favorable), unfavorable (comments which were wholly negative), favorable/unfavorable (comments which included both favorable and unfavorable remarks), and no comment. The results are shown below:

Favorable	Unfavorable	Favorable/Unfavorable	No Comment
49%	16%	15%	20%

1969-70 SURVEY OF THE SELF-ASSESSMENT SYSTEM

As was described earlier, the survey of students and teacher was repeated in 1969-70. This survey, however, included samples from both dependent and independent centers. The results of this survey are shown below.

Summary of Teachers' Opinions

1969-70

Total Number of Dependent Teachers Sampled: 25

Total Number of Dependent Teachers Responding: 24

Total Number of Independent Teachers Sampled: 32*

Total Number of Independent Teachers Responding: 21

*Although eight sets of teacher questionnaires were mailed to each of five independent centers, one set of eight was never distributed. Therefore, the actual number of teachers sampled was 32.

Column headings indicate whether the responses apply to teachers from dependent (Dep.) or independent (Indep.) schools. The total percent reported for one column exceeds 100 in some cases because some teachers marked more than one response.

Question: 1. I teach_____sections of ISCS grade 7 and _____sections of ISCS grade 8.

Dep.	Indep.	
27	34	Grade 7
81	54	grade 8

Question: 2. Do your students

Dep.	Indep.	
38%	90%	use Response Books instead of writing responses in the ISCS text?
88%	10%	have their own Self-Evaluation booklet?
13%	42%	use self-evaluation questions that you have reproduced instead of using their own Self-Evaluation booklet?

In 1969-70, two options relative to text materials were available to schools using ISCS. A text could be purchased for each student or a classroom set of texts could be purchased which would be used by more than one student. Under the latter system, Response Books were also available for purchase for each student. The Response Books consisted of all the questions, with space for answers, graphs, and tables that appear in the ISCS text. Purchasing a classroom set of texts along with Response Books for each student afforded a considerable financial savings to the schools involved. As a result, some independent schools purchased Response Books and classroom sets of the ISCS text materials. When classroom sets of ISCS materials are purchased, each student does not have a Self-Evaluation booklet. This accounts for the great difference in answers to this question. Dependent centers were supplied text materials by ISCS and each student received his own set of materials including a Self-Evaluation booklet. One thing to keep in mind is that no seventh grade classes were supported by ISCS, so the dependent center teachers who taught both grades seven and eight were operating in grade eight as dependent teachers and in grade seven as independent teachers.

Question: 3. Do you find self-evaluation questions useful to

Dep.	Indep.	
29%	48%	determine student's grade in any way?
70%	80%	regulate student pace through materials?

Despite the fact that teachers are requested not to use the self-evaluation questions for grading purposes, some teachers do use them for determining grades.

Question: 4. Do you require your students to use the self-evaluation questions?

Dep.	Indep.	
83%	81%	yes
17%	19%	no

Question: 5. Do you allow students who work in pairs to do so on the self-evaluation questions?

Dep.	Indep.	
42%	57%	yes
54%	43%	no

Question: 6. Are the answer keys for the Self-Evaluation booklets readily available to your students?

Dep.	Indep.	
83%	90%	yes
17%	10%	no

Question: 7. Do you think the self-evaluation questions are worthwhile?

Dep.	Indep.	
100%	100%	yes
0%	0%	no

Please explain.

Ninety-six percent of the dependent teachers and ninety-five percent of the independent teachers gave an explanation. There were no negative comments. All of the teachers who made a comment stated that the self-evaluation questions were an excellent review for the student. Some teachers said it helped them keep track of the individual student's progress and also helped them pace their students. Five teachers said that the self-evaluation questions helped the student become more responsible for his own learning.

Question: 8. Do the students use the self-evaluation questions without your prodding them to do so?

Dep.	Indep.	
88%	71%	yes
25%	38%	no

Please explain.

Ninety-six percent of the dependent and eighty-six percent of the independent teachers offered an explanation. Some teachers checked both yes and no. They indicated that some students needed to be encouraged to use the self-evaluation, whereas, others did not.

Question: 9. What do you think are the main advantages, if any, of self-evaluation?

Response: All teachers indicated that the main advantage was review. No teacher indicated that there were no advantages.

Question: 10. What do you think are the main disadvantages, if any, of self-evaluation?

Response: Only seven percent of dependent teachers and five percent of independent teachers indicated there were any disadvantages. The consensus of these teachers was that some students are not yet ready to assume the responsibility for their own work and needed a great deal of pushing and

encouragement not to look up the answers before answering the items.

Question: 11. Explain briefly how you use the self-evaluation questions in your classroom.

Response: The descriptions provided by both dependent and independent teachers were relatively the same. A student upon completing a chapter takes the self-evaluation questions, answers them, checks his answers, and continues in the core text. Some teachers review the papers; others leave all the responsibility to the student.

Question: 12. What percentage of your students consistently use the self-evaluation questions?

Dep.		Indep.	
0%	25%	0%	25%
17%	50%	5%	50%
17%	75%	14%	75%
67%	100%	81%	100%

Summary of Students' Opinions

1969-70

Total Number of Dependent Classrooms Sampled: 10

Total Number of Dependent Classrooms Responding: 10

Total Number of Dependent Students Responding: 264

Total Number of Independent Classrooms Sampled: 20

Total Number of Independent Classrooms Responding: 17

Total Number of Independent Students Responding: 611

Question: 1. I am in

Dep.	Indep.	
0*	267	grade 7
264	344	grade 8

Question: 2. I use the self-evaluation questions because

Dep.	Indep.	
72%**	70%	they help me review what I have learned.
62%	49%	they help me find out what I don't know.

Question: 3. I use the self-evaluation questions

Dep.	Indep.	
82%	71%	after every chapter I finish.
17%	24%	after some chapters.
2%	4%	never.

Question: 4. I use the self-evaluation questions because

Dep.	Indep.	
86%	73%	my teacher requires me to use them.
32%	32%	I like to use them.

*During the 1969-70 field trial there were no grade seven classrooms supported by ISCS.
**The total percent reported for one column exceeds 100 in some cases because some students marked more than one response.

Question: 5. When I find I have a wrong answer I

Dep.

a. Talk to my teacher 13% always, 66% sometimes, 20% never.

b. Review the material in the book 22% always, 63% sometimes, 14% never.

c. Talk to a classmate 30% always, 57% sometimes, 10% never.

Indep.

a. Talk to my teacher 9% always, 65% sometimes, 22% never.

b. Review the material in the book 20% always, 59% sometimes, 18% never.

c. Talk to a classmate 32% always, 52% sometimes, 11% never.

Question: 6. I think that the self-evaluation questions are

Dep.	Indep.	
16%	15%	too hard most of the time.
7%	8%	too easy most of the time.
82%	76%	about right in difficulty most of the time.

Questions 7 and 8 were for students in grade 8 only.

Question: 7. Did you have ISCS last year in grade 7?

Dep.	Indep.	
86%	76%	yes
14%	24%	no

The number of eighth grade students in dependent centers was 264, the number in independent centers was 344.

Question: 8. If you answered yes to question 7, did you use self-evaluation questions when you were in grade 7?

Dep.	Indep.	
71%	76%	yes
21%	23%	no

Iggy wants to know what you think about the self-evaluation questions. Write your opinions on the back of this paper.

This was an open-ended question. Approximately six hundred students wrote some kind of statement. The responses were categorized into four groups: Favorable (comments which were entirely favorable), unfavorable (comments which were wholly negative), favorable/unfavorable (comments which included both favorable and unfavorable remarks), and no comment. The results are shown below:

Dep.	Indep.	
53%	48%	Favorable
12%	9%	Unfavorable
4%	16%	Favorable/Unfavorable
31%	27%	No Comment

STUDENT COMMENTS

A few student comments were selected at random from the replies and are presented here in an unedited form. Although the students were asked to give their opinion of self-evaluation, their opinions sometimes reflected what they thought of the ISCS course as well.

The self-evaluation questions, for one thing, are yours that you don't have to pass in. They review the material we have covered to keep the work in our heads. When you want to study for a test you can bring the little phamplet instead of the big, regular book. The questions are a little harder, but they aren't as hard that you don't understand them.

I think these questions are a thing to have to review for a test. Some of these question I feel are just a little hard. I really like the Iggy cartoons in the book. They are fun to look and also give impurtant messages.

I think self evaluation is dumb. I think the whole ISCS program is dumb. I haven't learned a thing! It is very boring!! If we could study something interesting I would like science, but I hate it. So does everyone I know. Plants and animals or oceanography we be so fun. This program I've had for two yrs. and haven't learned one damn thing. And I have tried.

I think the self-evaluation system is a good one. However, I believe that in some parts the questions can be bad, or even so bad that they're comical. For example, while doing an electricity chapter, the self evaluation quiz was fairly good, but in one of those questions, they showed a picture of a circut with a switch, and a light bulb, they then asked; what is wrong with this circuit? Now I believe that a high class cucumber could have discovered that there was no power source.

The ISCS course may work well for students needing to grasp an idea to reason it out, however most of the students (about 50% I would imagine) do not fall in this catagory. There fore I would suggest a sister course with a higher grade level attitude.

I think the whole program is pretty good most of the time, but sometimes I wish some of the main ideas in it would be told more clearly and directly. Sometimes when you have to experiment to find some main answers you never get quite the right one. I also feel there is too much competition in our class, and that some people just try to get the most done as quickly as possible, instead of trying to learn.

Self evaluations are ok for review except some questions are a little twisted up. I think if you can get the self evaluation's questions right you would be right to go on in the book. When you get 1/2 and 1/2 you need more work but when you get them all wrong you should redo the chapter so my conclusion is that I think self evaluations are good.

I think these questions in this book are very necessary because the regular book has so much to cover, this little book kind of picks out just the important facts. It also condenses it very much.

I think that the only reason I do them is because if you do them right you'll benefit from them and I want to get an A.

The're in the groove.

I think it would be more effective if we had it every few chapters.

I like self-evaluation but some of the questions are too hard. I don't like having to our teacher having to check them.

I am the kind of person that when the experiment is told to me I can do it. But when I have to explain it in detail I go blank even when I did it I understood it. The self-evaluation doesn't help me at all and the only reason I do it is because it is required. I love this kind of science because I can go on my own speed, but I understand what I was suppose to find even if I can't put it in to words.

I think we could do with out them. Sometimes they have things that don't even go with the chapter. And we don't like science anyway!

I don't especially like them. I use them if I don't get the chapter very well. I guess their o.k. When I do take them I study them for my tests. They are good to have.

I think that the self-evaluation questions are good questions. I also think that some of the questions are pretty hard which causes us to think a little harder which is good. I think the ISCS method has taught me the most.

I think it helps most of the time. I don't usually think them or just part of the science.

I like self evaluation cuz the answers are the best part. Sometimes its like someone talking to you and you don't have to worry about making mistakes cuz they never got mad.

SUMMARY

In order to determine how the self-assessment system was actually being used in ISCS classrooms, questionnaires were prepared and administered to both teachers and students during the 1968-69 and 1969-70 academic years. The results from these questionnaires indicate that for the most part students consider the self-evaluation questions valuable, particularly as a review. Approximately three-fourths of the students reported that they use the self-evaluation questions after every chapter and that the questions were about right in difficulty most of the time. There was no significant difference between the responses of students in dependent (ISCS supported) and independent centers. From the student responses to the questionnaire, it appears that the self-assessment system is serving its function, providing feedback to the student as he progresses through the instructional materials.

The opinions of the teachers towards self-evaluation were also favorable. A fundamental difference between independent and dependent centers affected replies to two questions. Since the dependent centers are supported by ISCS, each student in dependent schools has his own Self-Evaluation booklet. However, in independent centers, students tend to have Response Books and their self-evaluation questions were often in booklets that had in some way been locally reproduced by the teacher. This indicated that the independent teachers recognized the value of individual self-evaluation booklets even though they

were unable to obtain a sufficient quantity when they purchased classroom sets of texts. About forty-eight percent of the independent teachers use self-evaluation for grading in some way as compared to twenty-nine percent of the dependent teachers. In addition, eighty percent of the independent teachers use the self-evaluation as a means of pacing as compared to fifty percent of the dependent teachers.